

### ABSTRACT OF THE DISCLOSURE

Computer aided diagnosis techniques in medical imaging are developed for the automated differentiation between benign and malignant lesions and go beyond computer aided detection by providing cancer likelihood for a detected lesion given image and/or patient characteristics. A computer aided detection and diagnosis algorithm for mammographic calcification clusters is developed and evaluated. The emphasis is on the diagnostic component although the algorithm includes automated detection, segmentation, and classification steps based on wavelet filters and artificial neural networks. Classification features are selected primarily from descriptors of the morphology of the individual calcifications and the distribution of the cluster as well as patient's demographics as input to the network. The selected features are robust morphological and distributional descriptors, relatively insensitive to segmentation and detection errors such as false positive signals and variations among imaging sources or imaging equipment.